Hanford Waste Treatment Project

Pretreatment Engineering Platform

Reducing Technical Risks for the Waste Treatment Plant Pretreatment Facility through Scaled Process Testing

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U.S. Department of Energy

Pretreatment Engineering Platform (PEP)

- Background
- M-12 Issue Response Plan
- PEP Phase I Testing Objectives
- Status

Background

- **DOE Office of River Protection (2004) and External Flowsheet Review Team review (BNI 2006-1) identified issues with Pretreatment Ultrafiltration Process (UFP)**
  - Issue M12: *Need to demonstrate the Pretreatment Ultrafiltration System Capacity and Leaching Processes at greater than bench-scale.*

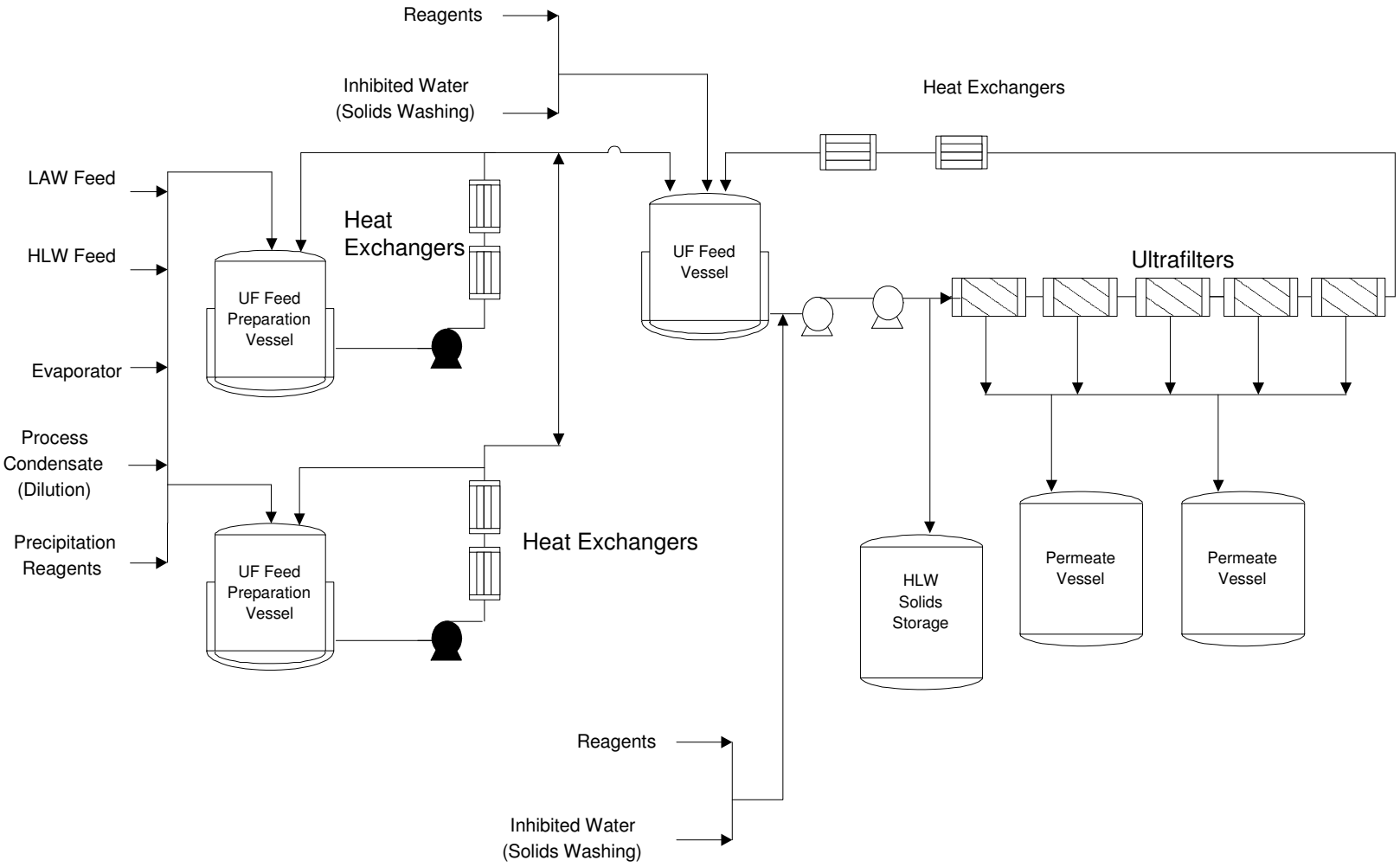
- Issue Response Plan prepared in 2006 to address the issue.

Issue Response Plan

- **The Issue Response Plan has four primary parts:**

1. Modeling to project system performance and identify prudent changes
2. Waste characterization
3. Simulant development
4. Engineering scale testing

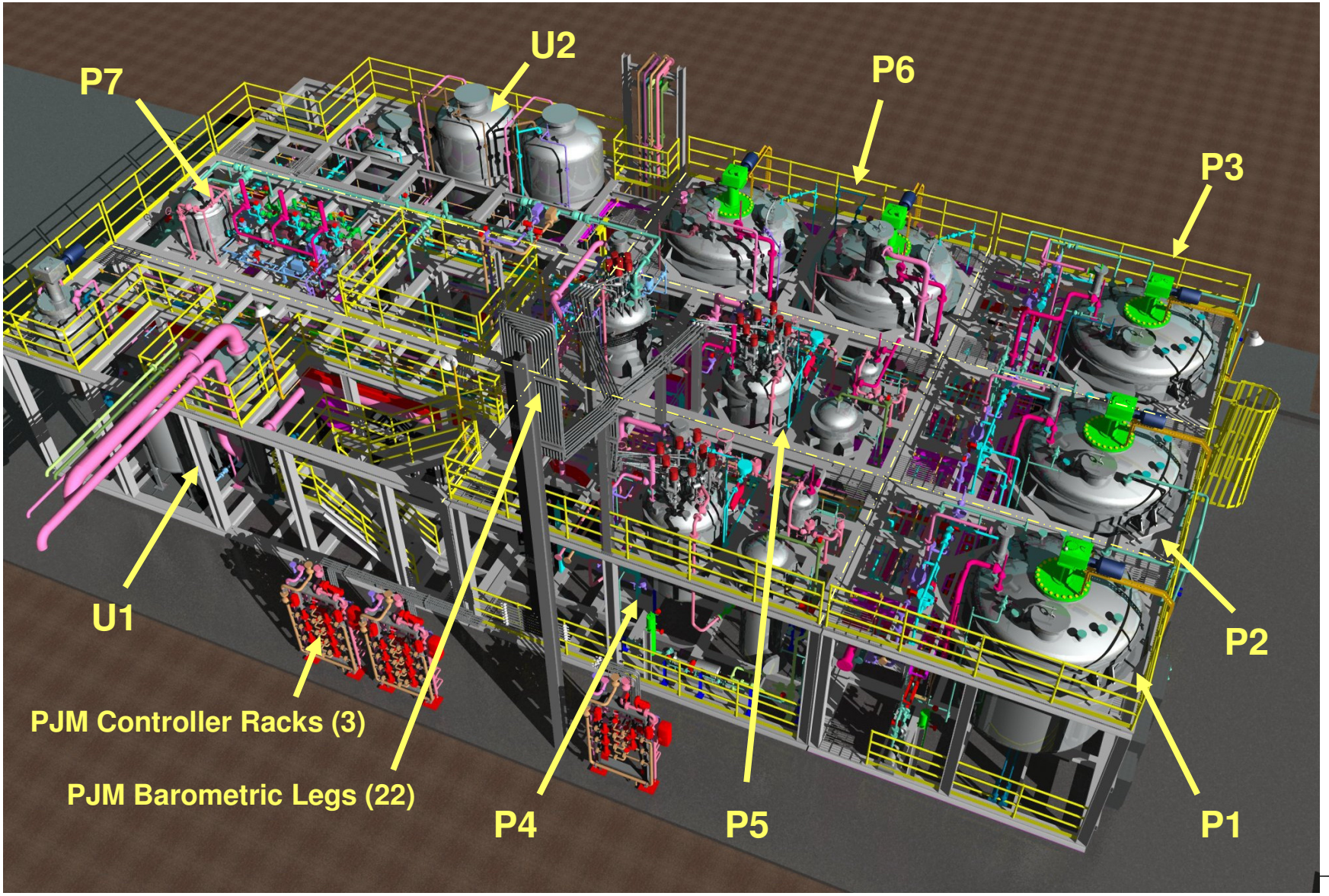
PEP Simplified Flow Diagram



Testing Objectives

- Collect data for design input with the objective to *"...confirm the UFP system design and sludge treatment process flowsheet".*
- Under prototypic conditions demonstrate:
  - Solids concentration
  - Aluminum leaching
  - Chromium leaching
  - Washing

PEP Rendering



Modular Design – 16 Skids

- P1 - LAW Feed Receipt
- P2 - HLW Feed Receipt
- P3 - LAW Evaporator
- P4 - UFP Feed Preparation
- P5 - UFP Feed Prep & UF Feed
- P6 - UF Permeate
- P7 - UF Pumps & Ultrafilters
- U1 - Off Gas, HLW, 2M Nitric Acid
- U2 - H_2O & Chemical
- U3 - Vent Stack & Blower
- U4 - Reverse Osmosis
- U5 - Chilled Water
- U6 - Boiler
- U7 - Compressed Air
- U8 - Dryer
- U9 - Vacuum

PEP Status

- Design, Construct, and Ship completed April 10, 2008 in a little over one year.
- Assembly planned for completion by the end of May 2008.
- Integrated System Testing planned to be initiated Fall 2008.
- Data needed by mid-2009 to support continued WTP Pretreatment Facility construction.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